

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 -30 (canceled).

Claim 31 (original): A radiation detecting system comprises an optical fiber cable adapted to emit light at a region where radiation is applied and transmitting the emitted light, photoelectric conversion means connected to at least one end of said optical fiber cable, and processing means detecting when radiation is applied in accordance with an output signal of said photoelectric conversion means.

Claim 32 (original): A radiation detecting system defined in claim 31, wherein said radiation detecting system further includes an A/D conversion means between said photoelectric conversion means and said processing means to digitize said output signal.

Claim 33 (original): A radiation detecting system defined in claim 31, wherein said photoelectric conversion means includes one input terminal in which one end of said optical fiber cable is connected.

Divisional for U.S. Patent Application Serial No. 09/522,185

Claim 34 (original): A radiation detecting system defined in claim 33, wherein said optical fiber cable further includes a reflection means at another end of said optical fiber cable.

Claim 35 (original): A radiation detecting system defined in claim 33, wherein said another end of said optical fiber cable is opened.

Claim 36 (original): A radiation detecting system defined in claim 31, wherein said photoelectric conversion means includes two input terminals to which both ends of said optical fiber cable are respectively connected.

Claim 37 (original): A radiation detecting system defined in claim 31, wherein said optical fiber cable further includes at least one detect portion, wherein the light emitted at said detect portion when radiation is applied to said detect portion is transmitted within said optical fiber cable.

Claim 38 (original): A radiation detecting system defined in claim 37, wherein said optical fiber cable further includes: an optical fiber having; an optical transmission core extending along one direction to transmit light emitted at said detect portion; a clad layer covering a peripheral surface of said core; and a scintillator material dispersed in said clad layer and emitting layer light when radiation is applied,

Divisional for U.S. Patent Application Serial No. 09/522,185

a radiation-shielding layer covering substantially over a periphery of said optical fiber, wherein a gap is provided with locating in at least one part of said radiation-shielding layer as said detect portion.

Claim 39 (original): A radiation detecting system defined in claim 37, wherein said optical fiber cable further includes: an optical fiber having; an lightwave guide core extending along one direction to transmit light emitted at said detect portion; a clad layer covering over a peripheral surface of said core to make a light transmitted in said core shield within said core; a detecting layer covering over a peripheral surface of said clad layer, a scintillator material dispersed in said detecting layer and emitting light when radiation is applied, and

a radiation-shielding layer covering substantially over a periphery of said optical fiber, wherein a gap is provided with locating in at least one part of said radiation-shielding layer as said detect portion.

Claim 40 (original): An radiation detecting system defined in claim 38, wherein said optical fiber cable further includes a reinforcing layer adapted to cover a peripheral surface of said optical fiber.

Claim 41 (original): A radiation detecting system defined in claim 40, wherein said radiation-shielding layer includes bunch of reinforcing fiber extending along said one direction.

Divisional for U.S. Patent Application Serial No. 09/522,185

Claim 42 (original): A radiation detecting system defined in claim 41, wherein said reinforcing fiber be secured on a periphery of said optical fiber with a tape winded around a periphery of said bunch of reinforcing fiber.

Claim 43 (original): A radiation detecting system defined in claim 39, wherein said optical fiber cable further includes a reinforcing layer adapted to cover a peripheral surface of said optical fiber.

Claim 44 (original): A radiation detecting system defined in claim 43, wherein said radiation-shielding layer includes bunch of reinforcing fiber extending along said one direction.

Claim 45 (original): A radiation detecting system defined in claim 44, wherein said reinforcing fiber be secured on a periphery of said optical fiber with a tape winded around a periphery of said bunch of reinforcing fiber.

Claim 46 (original): A radiation detecting system defined in claim 38, wherein said radiation-shielding layer is adapted to cover a peripheral surface of said reinforcing layer.

Claim 47 (original): A radiation detecting system defined in claim 46, wherein said radiation-shielding layer is formed by winding a tape coated with lead.

Divisional for U.S. Patent Application Serial No. 09/522,185

Claim 48 (original): A radiation detecting system defined in claim 39, wherein said radiation-shielding layer is adapted to cover a peripheral surface of said reinforcing layer.

Claim 49 (original): A radiation detecting system defined in claim 48, wherein said radiation-shielding layer is formed by winding a tape coated with lead.

Claim 50 (original): A radiation detecting system defined in claim 38, wherein said gap is formed over the entire length in the circumferential direction of said optical fiber.

Claim 51 (original): A radiation detecting system defined in claim 39, wherein said gap is formed over the entire length in the circumferential direction of said optical fiber.

Claim 52 (original): A radiation detecting system defined in claim 38, wherein said gap is formed in plural parts of said radiation-shielding layer along said one direction with a predetermined space.

Claim 53 (original): A radiation detecting system defined in claim 39, wherein said gap is formed in plural parts of said radiation-shielding layer along said one direction with a predetermined space.

Divisional for U.S. Patent Application Serial No. 09/522,185

Claim 54 (original): A radiation detecting system defined in claim 38 through 36, wherein said optical fiber cable further includes a radiotransparent tegumentary layer is adapted to cover over a periphery of said radiation-shielding layer with locating as the most outer layer.

Claim 55 (original): A radiation detecting system defined in claim 39, wherein said optical fiber cable further includes a radiotransparant tegumentary layer is adapted to cover over a periphery of said radiation-shielding layer with locating as the most outer layer.

Claim 56 (original): A radiation detecting system defined in claim 38, wherein said scintillator material is inorganic scintillator material.

Claim 57 (original): A radiation detecting system defined in claim 56, wherein said scintillator material is dispersed in said clad layer by way of dope.

Claim 58 (original): A radiation detecting system defined in claim 57, wherein said scintillator material is dispersed in said detecting layer by way of dope.

Claim 59 (original): A radiation detecting system defined in claim 39, wherein said scintillator material is inorganic scintillator material.

Divisional for U.S. Patent Application Serial No. 09/522,185

Claim 60 (original): A radiation detecting system defined in claim 59, wherein said scintillator material is dispersed in said clad layer by way of dope.

Claim 61 (original): A radiation detecting system defined in claim 60, wherein said scintillator material is dispersed in said detecting layer by way of dope.

Claim 62 (original): A radiation detecting system defined in claim 38, wherein said radiation is at least one radiation selected from said group consisting of X-ray, α -ray, β -ray, and γ -ray, and said scintillator material is emitted when any of X-ray, α -ray, β -ray, and γ -ray is applied.

Claim 63 (original): A radiation detecting system defined in claim 39, wherein said radiation is at least one radiation selected from said group consisting of X-ray, α -ray, β -ray, and γ -ray, and said scintillator material is emitted when any of X-ray, α -ray, β -ray and γ -ray is applied.

Claim 64 (original): A radiation detecting system defined in claim 38, wherein said optical fiber cable further includes a protective layer adapted to cover a peripheral surface of said clad layer.

Claim 65 (original): A radiation detecting system defined in claim 39, wherein said optical fiber cable further includes a protective layer adapted to cover a peripheral surface of said detecting layer.

Divisional for U.S. Patent Application Serial No. 09/522,185

Claim 66 (original): A radiation detecting system defined in claim 38, wherein said core is formed of quartz glass.

Claim 67 (original): A radiation detecting system defined in claim 39, wherein said core is formed of quartz glass.

Claim 68 (original): A radiation detecting system defined in claim 38, wherein said clad layer is formed of transparent polymer synthetic resin.

Claim 69 (original): A radiation detecting system defined in claim 39, wherein said clad layer is formed of transparent polymer synthetic resin.